particular cases of the following construction with ruler only, whenever a parallel to AB[1] is given: Join O, a point not on AB or the parallel, to A and to B meeting the parallel in D and C respectively. Let DB and CA meet in E, and OE meet AB in F. Join CF meeting DB in G, and let OG meet BA in H, etc. The points F, H, etc., are the same as those found before. This construction was given by Brianchon in 1818 in his *Application de la Théorie des Transversales*, page 37. He remarks: "Ce problème pourrait servir à se former, sur le terrain, une échelle de lever, si on n'avait pas à sa disposition une des mesures reçues, et qu'on connût d'ailleurs la longueur totale de la ligne prise pour échelle."

Lambert gave another construction in his *freye Perspective, oder Anweisung . . .* 1774, pages 173–174.

ARC.

PROBLEMS—SOLUTIONS

19 (Calculus) [1894, 165, 273–275]. Proposed by A. L. FOOTE, Merrick, N. Y.

A and B are in a circular room $2R = 30$ feet in diameter, A being at the center and B at the circumference. B runs around at the rate of $v = 600$ feet per minute and A pursues him at the rate of $u = 100$ feet per minute. How long will the race last, and how far will each have traveled till B is caught?

160 (Calculus) [1902, 271; 1903, 104–106]. Proposed by B. F. FINKEL, Drury College.

A dog at the vertex of a right conical hill pursues a fox at the foot of the hill. How far will the dog run to catch the fox, if the dog runs directly toward the fox at all times and the fox is continually running around the hill at its foot, the velocity of the dog being 6 feet per second, the velocity of the fox being 5 feet per second, the hill being 100 feet high and 200 feet in diameter at the base?

273 (Calculus) [1909, 76, 123–124; 1910, 221]. Proposed by J. SCHEFFER, Hagerstown, Md.

On one side of a circular pond a feet in radius is a duck. On the diametrically opposite side of the pond is a dog. Both swim at the same time, the duck swimming around the circumference of the pond at the rate of m feet a minute, the dog swimming directly towards the duck at the rate of n feet per minute. How far will the dog swim in overtaking the duck?

2801 [1920, 31]. Proposed by A. S. HATHAWAY, Houston, Texas.

A dog at the center of a circular pond makes straight for a duck which is swimming along the edge of the pond. If the rate of swimming of the dog is to the rate of swimming of the duck as $n : 1$, determine the equation of the curve of pursuit and the distance the dog swims to catch the duck.

I. REMARKS AND HISTORICAL NOTES BY R. C. ARCHIBALD AND H. P. MANNING, Brown University.

In 1732 Bourger read before the French Academy a memoir "Sur de nouvelles courbes ausquelles on peut donner le nom de Lignes de Poursuite"[2] in which he solved the following problem: "Trouver la courbe de poursuite, c'est-à-dire la courve par laquelle un vaisseau doit en poursuivre un autre qui s'enfuit par une ligne droit, en supposant que les vîtesses des deux vaisseaux soient toûjours dans le même rapport."

Maupertuis gave[3] a briefer solution of this and formulated also the following more general

[1] Or AA' bisected at B; with this given Lambert showed, in 1774, that a parallel to AB can with ruler alone, readily be drawn through any point.

[2] *Histoire de l'Académie Royale des Sciences*, 1732. Paris, 1735, Memoires, pp. 1–14.

[3] Idem, pp. 15–16.